

IN THE CLAIMS

Claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 and 14 are being amended as follows:

1. (Currently Amended) A method of determining a proper overlay tolerance in a photolithography process, comprising the steps of:
exposing wafers at different critical dimensions;
using a photolithography process to form first and second layers of patterns on a wafer, each of a set of patterns of said second layer being overlaid with an associated tolerance, with an associated one of the patterns of said first layer;

varying the overlay associated tolerances across each the wafer; and

using functional yield data from the wafer to determine the a proper overlay tolerance for each of the image sizes patterns of said first and second layers.

2. (Currently Amended) A method according to Claim 1, wherein the exposing step of using a photolithography process includes the step of exposing the wafers at critical dimensions relative to an optimum image size.

3. (Currently Amended) A method according to Claim 2, wherein the step of exposing the wafers at critical dimensions includes the step of exposing the wafers at critical dimensions above, below and at the optimum image size.

4. (Currently Amended) A method according to Claim 1, wherein the varying step includes the step of varying the overlay across each the wafer by intentionally changing the magnification.

5. (Currently Amended) A method according to Claim 4, wherein the step of varying the overlay across each the wafer includes the step of varying the overlay tolerance across each the wafer by intentionally increasing the magnification

6. (Currently Amended) A method according to Claim 1, wherein the using step of using functional yield data includes the steps of:

testing each of the wafers to identify a good region and a bad region; and

identifying the overlay tolerance, at which the bad region begins, as said determined proper overlay tolerance.

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7. (Currently Amended) A method according to Claim 1, wherein the using step of using a functional yield data includes the step of:

searching the overlays across one of the wafers for a defined feature; and

if the defined feature is found in one of the searched overlays, identifying the overlay tolerance of said one of the overlays as the determined proper overlay tolerance.

8. (Currently Amended) A system for determining a proper overlay tolerance in a photolithography process, comprising:

~~means for exposing wafers at different critical dimensions;~~

photolithography apparatus to form first and second layers of patterns on a wafer, each of a set of patterns of said second layer being overlaid with an associated tolerance, with an associated one of the patterns of said first layer;

means for varying the overlay associated tolerances across each the wafer, and

means for using functional yield data from the wafer to determine the a proper overlay tolerance for each of the image sizes patterns of the first and second layers.

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9. (Currently Amended) A system according to Claim 8, wherein the exposing means photolithography apparatus includes means for exposing the wafers at critical dimensions relative to an optimum image size.

10. (Currently Amended) A system according to Claim 9, wherein the means for exposing the wafers at critical dimensions includes means for exposing the wafers at critical dimensions above, below and at the optimum image size.

11. (Currently Amended) A system according to Claim 8, wherein the varying means includes means for varying the overlay across each the wafer by intentionally changing the magnification.

12. (Currently Amended) A system according to Claim 11, wherein the means for varying the overlay tolerance across each the wafer includes means for varying the overlay tolerance across each the wafer by intentionally increasing the magnification.

13. (Currently Amended) A system according to Claim 8, wherein the using means includes:

means for testing each of the wafers to identify a good region and a bad region; and

means for identifying the overlay tolerance, at which the bad region begins, as said determined proper overlay tolerance.

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14. (Currently Amended) A system according to Claim 8, wherein the using means includes:

means for searching the overlays across one of the wafers for a defined feature; and

if the defined feature is found in one of the searched overlays, means for identifying the overlay tolerance of said one of the overlays as the determined overlay tolerance.

Please add Claims 15-18 as follows:

~~-~~ 15. (New) A method of determining an acceptable overlay tolerance in a photolithography process, comprising the steps of:

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providing a multitude of wafers:

for each of the wafers,

- i) using a photolithography process to form first and second layers of patterns on a wafer, each of a set of patterns of said second layer being overlaid, with an associated tolerance, with an associated one of the patterns of said first layer, and
- ii) varying the associated tolerances across the wafer, and

using functional yield data from the wafers to determine proper overlay tolerances for patterns of said first and second layers.

16. (New) A method according to Claim 15, wherein,

said set of patterns including multiple image sizes; and

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the step of using functional yield data includes the step of using the functional yield data to determining a proper tolerance for each of said image sizes.

17. (New) A method according to Claim 15, wherein the varying step includes the step of varying the tolerances across the wafer by changing the magnification.

18. (New) A method according to Claim 15, wherein the varying step includes the step of varying the tolerances across the wafer by increasing the magnification. -